Contents

Part I: Basic Considerations

- 1. Scientific thinking, 1
- 2. Cell structure and function, 10
- 3. Golden rules in surgical pathology, 23

Part II: Non-neoplastic Diseases

- 4. Developmental abnormalities, 28
- 5. Inflammation and its complication, 38
- 6. Infections, 47
- 7. Cell degeneration and death, 56
- 8. Vascular diseases, 71
- 9. Iatrogenic diseases, 78
- 10. Autoimmune diseases, 82
- 11. Transplantation pathology, 87

Part III: Neoplasia

- 12. Disorder of growth and differentiation, 93
- 13. Histologic classification of tumors, 104
- 14. Behavior classification of tumors, 129
- 15. Staging of cancer, 138
- 16. Special techniques in surgical pathology, 180
- 17. Applied molecular genetics, 201
- 18. Syndromes as a guide to diagnosis, 213
- 19. Diagnostic challenges and pitfalls, 235

Part IV: Appendix

Abbreviations, 245

Normal laboratory values, 250

MCQs, 253

Answer of MCQs, 269

Subject Index, 270

Picture Index, 274

| | | |
|----------|------|-------|
| | | |
| i | | - : |
| į. | | i |
| <u> </u> | | 1 |
| i | | - ! |
| I | | i |
| ! | | 1 |
| i | | |
| I | | i |
| ! | | i |
| i | | |
| I | | i |
| ! | | i |
| ; | | ! |
| i | | |
| ! | | i |
| - | | ! |
| i | | - |
| į. | | i |
| <u> </u> | | 1 |
| i | | - : |
| I | | i |
| ! | | 1 |
| i | | ! |
| I | | i |
| ! | | i |
| ; | | ! |
| L | | : |

SURGICAL PATHOLOGY

Atlas and Synopsis

Editor

M.Nabil El-Bolkainy

Contributing Authors

Amany A Abou-Bakr Nayera Anwar Omnia M Badawy Mahmoud A EL-Baz Tarek N EL-Bolkainy Mervat M F EL-Deftar Habiba EL-Fendy Saad S Eissa Iman G Farahat Hoda M Ismail

Nesreen Magdy
Esam M Mandour
Osama M Mostafa
Magda Mourad
M Akram Nouh
Ahmed M Rabie
Samir A Shawky
Sohair H Shoman
Hassan N Tawfik
Muhammad Zain.

First Edition, 2018

This book is a nonprofit limited publication of the National Cancer Institute (NCI), Cairo University and distributed free of charge to specialized staff of NCI and postgraduate students. The scientific material is in conformity with the curriculum of the postgraduate educational program of NCI

All figures of the book are hand drawn by the editor and computer labeled by Dr. Muhammad Zainelabideen Youssif. Enclosed with the book is a CD containing illustrative colour pictures. The majority of pictures are photographs from private collection of the editor, but few are donated by colleagues or reproduced with recognition from PathologyOutlines.Com. The text and illustrative material are protected by copyright. No parts of this book may be reproduced by any means without written permission from the editor (M N EL-Bolkainy, 2 Sherif St, Apt 18, Lewa building, Cairo Egypt, Email: dr.nbolk@gmail.com).

Cover pictures: Bone marrow stem cells in culture, Bilharzia worms in portal circulation and Adenoid cystic carcinoma of salivary gland.

Printed in Egypt EL-Dorra Publishing Co.

ISBN 978-977-807-125-2

Contributors

Amany A Abou-Bakr, MB BCh, MD

Professor, Department of pathology National Cancer Institute Cairo University, Egypt

Nayera Anwar, MB BCh, MD

Professor, Department of Pathology National Cancer Institute Cairo University, Egypt

Omnia M Badawy, MB BCh, MD

Lecturer, Department of Pathology National Cancer Institute Cairo University, Egypt

Mahmoud A El-Baz, MB BCh, MD

Professor, Department of Pathology Consultant, Mansura Urology and Nephrology Center Mansura University, Egypt

Muhammad N El-Bolkainy, MB BCh, Dip Surg, PhD (Michigan), ABP.

Professor, Department of Pathology National Cancer Institute Cairo University, Egypt

Tarek Nabil El-Bolkainy, MB BCh, MD

Assistant Professor, Department of Pathology National Cancer Institute Cairo University, Egypt

Mervat MF El-Deftar, MB BCh, MD

Assistant Professor Department of Pathology National Cancer Institute Cairo University, Egypt

Habiba El-Fendy, MB BCh, MSc

Assistant Lecturer,
Department of Pathology
National Cancer Institute
Cairo University, Egypt

Saad S Eissa, MB BCh, PhD

Professor, Department of Pathology National Cancer Institute Cairo University, Egypt

Iman G Farahat, MB BCh, MD

Professor, Department of pathology National Cancer Institute Cairo University, Egypt

Hoda M Ismail, MB BCh, MD

Professor, Department of Pathology National Cancer Institute Cairo University, Egypt

Nesreen Magdy, MB BCh, FRCPath, PhD

Lecturer, Department of Pathology National Cancer Institute Cairo University, Egypt

Esam M Mandour, MB BCh, MD

Lecturer, Department of Pathology Al- Azhar Faculty of Medicine Al- Azhar University, Egypt

Osama M Mostafa, MB BCh, MD

Lecturer, Department of Pathology Al- Azhar Faculty of Medicine Al- Azhar University, Egypt

Magda Mourad, MB BCh, MD

Professor, Department of Pathology National Cancer Institute Cairo University, Egypt

M Akram Nouh, MB BCh, MD

Professor, Department of Pathology National Cancer Institute Cairo University, Egypt

Ahmed M Rabie, MB BCh, MD

Lecturer, Department of Pathology Al- Azhar Faculty of Medicine, Al- Azhar University, Egypt

Samir A Shawky, MB BCh, MD

Lecturer, Department of Pathology National Cancer Institute Cairo University, Egypt

Sohair H Shoman, MB BCh, MD

Professor, Department of Pathology National Cancer Institute Cairo University, Egypt

Hassan Nabil Tawfik, MB BCh, PhD

Professor, Department of Pathology National Cancer Institute Cairo University, Egypt

Muhammad Zainelabideen Youssif. MB BCh, MSc.

Assistant Lecturer, Department of Pathology, Al- Azhar Faculty of Medicine Al- Azhar University, Egypt

Preface

pathology is the study of diseases to provide a definitive diagnosis on which management of the patient is based. With the growth of this field in the 20th century, specialized publications became necessary. Notable pathologists with pioworks include: James (Neoplastic Diseases, 1919), William Boyd (Pathology for Surgeons, 1925), Lauren Ackerman (Surgical Pathology, 1953), Ruy Perez-Tamayo (Mechanisms of Disease, 1961), and J Walter and M Israel (General pathology, 1965). Publications on special pathology are innumerable, but standard references are those of the Armed Forces Institute of Pathology (AFIP), Washington DC and the World Health Organization (WHO).

The present book is a comprehensive review of all pathologic lesions and diseases of surgical importance. It includes 3 chapters on basic knowledge, 8 on non -neoplastic diseases and 8 on neoplastic tumors. The book is a synopsis because it includes all recent advances in a compact readable size. It is also an atlas in view of rich illustrative material (135 figures, and 442 colored pictures in the enclosed CD). Special features of the book include: the contribution of 20 authors, clinical application of basic science, outline of recent biotechnologies, adoption of international classifications including the updated 2017 TNM Staging system for cancer. In addition, the book includes 142 key references and websites for

further readings, medical abbreviations, normal laboratory values and MCQs for self-assessment.

The present work was only possible through the generous efforts of many others. First, I would like to thank all my esteemed professional colleagues, the chapter authors, for their wonderful contribution. Special thanks are due to Professor Akram Nouh for programing the CD and engineer Tamer Salah for his generous support for production of CDs. I am also grateful to Dr. Muhammad Zainelabideen Youssif. for his masterful computer works and formatting of the text. For review of the book, I would like to thank Professor Amany Abou-Bakr, as well as, my colleagues Dr. Nesreen Magdy, Ahmed Rabie, Moustafa Hussein, Basant Abdelmenem, Heba Abdel baky, Nesma Salah and Hend El-Ghareeb. I am also grateful to Dr. Ghada Mohamed and Nesreen Magdy for donating 5 valuable pictures to Chapter 16. For typing the text. I am thankful to Mrs. Wesam Sorour, Mona El-Sherbini and Shadi Sami.

We hope that the present publication may serve as a useful guide to postgraduate students, as well as, practicing surgeons and pathologists. This will ultimately be reflected on better care of patients, for whom this work is dedicated. We should never forget that a patient is a fellow creature in pain, not merely a vessel of disease.

Contents

Part I: Basic Considerations

- 1. Scientific Thinking, 1
- 2. Cell Structure and Function, 10
- 3. Golden Rules in Surgical Pathology, 23

Part II: Non-neoplastic Diseases

- 4. Developmental Abnormalities, 28
- 5. Inflammation and its Complication, 38
- 6. Infections, 47
- 7. Cell Degeneration and Death, 56
- 8. Vascular Diseases, 71
- 9. Iatrogenic Diseases, 78
- 10. Autoimmune Diseases, 82
- 11. Transplantation Pathology, 87

Part III: Neoplasia

- 12. Disorder of Growth and Differentiation, 93
- 13. Histologic Classification of Tumors, 104
- 14. Behavior Classification of Tumors, 129
- 15. Staging of Cancer, 138
- 16. Special Techniques in Surgical Pathology, 180
- 17. Applied Molecular Genetics in Cancer, 201
- 18. Syndromes as A guide to Cancer Diagnosis, 213
- 19. Diagnostic Challenges and Pitfalls, 235

Part IV: Appendix

Abbreviations, 245 Normal Laboratory values, 250 MCQs, 253 Answer of MCQs, 269 Subject Index, 270 Picture Index, 274